

Strange Forces in Nature;

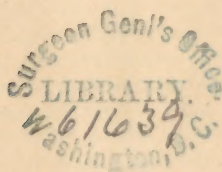
AND

THEIR RELATION TO THE HEALING ART.

An Introductory Lecture to the Course of 1874-75.

BY GEO. W. RAINS,

Professor Medical Chemistry and Practical Pharmacy in the Medical
Department of the University of Georgia.



Box 10

AUGUSTA, GA.

PRINTED BY E. H. FUGHE, JACKSON AND ELLIS STREETS.

1874.

CORRESPONDENCE.

AUGUSTA, GA., NOVEMBER 6, 1874.

Professor G. W. Rains:

DEAR SIR:

The members of the present class of the Medical College of Georgia, being desirous of publishing your highly interesting and scientific Introductory Lecture, have appointed us a Committee to request a copy of the same.

Very respectfully,

W. E. PRESCOTT.

P. H. EVE.

R. P. SORRELL.

MEDICAL COLLEGE, AUGUSTA, NOVEMBER 9, 1874.

Messrs. W. E. Prescott, P. H. Eve, R. P. Sorrell, Committee:

GENTLEMEN:

With pleasure I place a copy of my Lecture at your disposal. With due appreciation of the honor of the request, and with my sincere wishes for the welfare of the class,

I am, respectfully yours,

GEO W. RAINS.

LECTURE.

GENTLEMEN: It devolves upon me to make the annual address to your class, and in accomplishing this duty, it is a matter of consideration as to what shall be the subject. You have no time to listen to discourses that do not tend to give you additional knowledge in the profession you have adopted, or to suggest useful ideas relative to its practice. I will take advantage of the liberty which the occasion affords, to speak on a few subjects that cannot, as yet, be properly taught as science in the lecture room, and yet of great interest to the medical profession.

The progress of science resembles the exploration of an unknown—and in the minds of many a hostile—country; advanced scouts are thrown out from the main body to penetrate its tangled recesses and boggy grounds, to bring back information of new discoveries and feasible routes. Such information rarely proves strictly accurate, but it supplies indispensable aid for the advance of the army of workers, which steadily moves forward with resistless force. It is of this border land of science that, as one of the scouts, I bring you some news of interest; not first discovered by the speaker, however, who has mainly followed in the trails of those who preceded, but who confirms their tales and corroborates their assertions. To many of you who have but just entered as recruits into the army of progress, the matters treated of will be new and startling, but to those who are veterans in the ranks of science, I shall give perchance but little news that they have not received from other sources.

My subject may be entitled, "Strange Forces in Nature, and their Relation to the Healing Art."

It is well known that there is in progress a marked change in the usually accepted ideas of the constitution of matter, as well as in the nature of force. Solid and liquid masses, and the gases which we can weigh and measure, no longer comprehend the whole of material existence as now conceived; but recognised matter exists so transcendantly attenuated, that to use the language of an eminent physicist, only the mind can come into contact with it; nevertheless, actual matter completely filling space, and governed by fundamental laws. The beautiful blue of the sky is proven to be due to matter which, if the whole that is seen completely filling the vast firmament, were gathered up into the condensed form of ordinary matter, might, it is supposed, be enclosed in the palm of one's hand.

The phenomena of the tails of comets, the extremities of which in some cases move with astonishing velocity as they sweep around the sun in perihelion, appear best explainable as

being the result of an electric polarization of an etherealized matter filling space, producing a cosmical aurora. Even in the case of our atmosphere, which must extend not less than five hundred miles above the earth, as shown by the aurora, we find matter inappreciable to the skill of man. Vastly finer is that boundless ocean of matter called ether, which penetrates between all atoms, and fills the immensity of space with its eternal vibrations and undulations. It is assumed by many physicists, that the atoms of all matter are but the agglomerated and condensed points or particles of this primeval existence; its first appearance to optical vision being probably that faint luminosity enveloping the sun, giving its halo in total eclipses, and marking the first line of matter in the spectroscope. Hydrogen follows next with its three bright lines, and so on, until we arrive at platinum, which is two hundred and fifty thousand times more condensed than hydrogen.

Thus our conceptions of matter must be greatly expanded, before we can take in the facts of the surrounding universe, and, similarly, our conceptions of the forces which act on matter, must undergo material and essential changes. Mankind are indisposed to change long accepted ideas, and it is with great reluctance, cherished opinions are enlarged or abandoned. Scientists especially, as a class, cling with great tenacity to routine theories, and with strong opposition meet new views or accept new facts.

Thus the statements of the pioneers are received with incredulity, if tending to change preconceived views; and it is only after the vanguard of the main body in its advance, has actually occupied the disputed ground, that the tales of the scouts, with the required corrections, are received as fact and become accepted science. Hence are seen two classes of scientists; the statements set forth by the one being denied by the other, and generally long years elapse, sometimes centuries, before startling new truths, although set forth by the ablest men, are received and accepted.

One of the remarkable discoveries of modern times which met with great opposition, was promulgated at Vienna in 1776 by a German physician named Mesmer. He published a thesis setting forth that there was a universally diffused fluid which he called Animal Magnetism; that it was a subtle agent of communication between animate and inanimate nature. That it existed in man, and could by will be communicated, or passed into other persons, under favorable conditions; that, when so communicated to the sick it healed diseases, perfected the action of medicines, and brought on favorable crises. He assumed that this fluid issued from magnets, and at times used them in treating his patients.

This claim to the discovery of a new force produced great excitement in Europe, particularly in Paris, where two commissions from the Royal Academy of Medicine, one in 1784 and the other in 1831, reported on the alleged phenomena. The former admitted many of the asserted facts, but attributed the successful results to the imagination. The latter, composed of eleven mem-

bers, after consuming five years in their investigations, made a report entirely favorable to most of the asserted facts of animal magnetism, and in conclusion stated that as a therapeutic remedy, it ought to be allowed a place within the circle of the medical sciences. The British Foreign Medico-Chirurgical Review in 1851, in an elaborate article on the subject, stated that animal magnetism presents to the medical practitioner a new means of investigating the functions of the brain and nervous system, and of elucidating their physiology, pathology and therapeutics; and, therefore, the phenomena and alleged phenomena are most deserving the notice of the profession.

Many eminent physicians on the Continent and in Great Britain advocated the claims of mesmerism, as it was now called, as being a remedial agent possessing great power. Dr. Esdaile, a surgeon attached to the English army in India, established the practice of mesmerism in the army hospitals under his charge at Hooghly in 1845, and published a statement of the numerous and remarkable cures which followed in the treatment of a large variety of diseases. He organized a number of native assistants to whom he taught the art, and then availed himself of their aid in mesmerising the hospital patients; it is believed that in no case was there a failure in magnetising the patients, varying from one minute, to a dozen trials of one hour each, on successive days. Dr. Esdaile asserted that a force was communicated to the patient, since water could be charged with it, and that he had succeeded in magnetizing the blind without their knowledge, at a distance of 90 feet; also that the influence passed freely through walls, like ordinary magnetism or electrical induction.

He summed up his experience as follows: That mesmerism is a natural power of the human body; that it affects directly the nervous and muscular systems; that in the mesmeric trance, or sleep, the most severe and protracted surgical operations can be performed, without the patients being sensible of pain; that spasms and nervous pains often disappear before the mesmeric trance; that it gives us a complete command of the muscular system, and is therefore of great service in restoring contracted limbs; that the imagination has nothing to do with the first physical impression made on the system by mesmerism, as practiced by him; that it is not necessary for the eyes to be open; that it is better to shut them as a source of distraction, and that blind men are as readily mesmerised as others; that water can be charged with the mesmeric fluid, or force, and has a powerful effect on the system when it has been previously affected; that the mesmeric fluid, or force, can be transmitted through the air to considerable distances, and even pass through dense materials.

The late Dr. Gregory, the eminent professor of chemistry in the University of Edinburgh, was a strong advocate for its employment by physicians, and classified its therapeutic use; first, in relieving pain and curing diseases; secondly, its use in

preventing pain in surgical operations; thirdly; the use of magnets, crystals and other inanimate objects, as well as of magnetized water, or magnetized objects of any kind; and, lastly the use of clairvoyance in diagnosis.

The actuality of clairvoyance, or perception without the use of the known senses, is still an open question in the minds of many physicians, although probably generally adopted by those who have made the subject a thorough study. The lowest stage of this peculiar perception is in sympathy, a higher phase is thought reading, or the perception of ideas; this capability was possessed by Zschokke, the German Swiss writer, as detailed by him in his autobiography, and is, in a greater or lesser degree, more common than is generally imagined. A prominent case is in the person of Mr. G. R. Brown, who at the present time, is exhibiting this capability before the scientists of New York and Yale College. He submits to the conditions imposed, in fact allows the professors to arrange matters to their own satisfaction; he appears to be remarkably successful, and seems to have convinced the most sceptical. One of his acts at Yale was as follows: Professor Lyman held a paper in his hand concealed, on which words were written by Professor Fisher, and blindfolded, Brown spelled the words without difficulty.

Persons remarkable for mesmeric healing power were known before the time of Mesmer, one of whom Valentine Greatrakes, an Irishman, performed wonderful cures. At London, Oxford and other cities in England and Ireland, in 1666 and the years following, he attained such notoriety that thousands of patients from all parts of the country flocked to his residence. He made no charge for his cures, which were performed mainly by placing his hands on, and moving them over, the affected parts. The Bishop of Dromore stated that he could as an eye witness assert that Greatrakes cured dizziness, very bad diseases of the eyes and ears, old ulcers, goitre, epilepsy, glandular swellings, schirrhous indurations and cancerous swellings. The celebrated Robert Boyle, President of the Royal Society of London, said that many physicians, noblemen, clergymen, etc., testify to the truth of Greatrake's cures. The chief diseases cured were blindness, deafness, paralysis, ulcers, swellings and all kinds of fevers.

From remote periods the mesmeric treatment was employed to alleviate human suffering and healing the sick. Thus on the tombs and temples of ancient Egypt, on the mummy cases, as well as on amulets and charms, are seen representations of the priests, who were the physicians, performing the ceremony of making mesmeric passes over the sick, and placing their hands on the afflicted parts, precisely as is now done for like purposes. It was daily practiced in the temples of Isis, Osiris, and Serapis; in these temples the priest treated the sick and healed diseases, either by magnetic manipulations, or other means producing somnambulism. In India likewise, from a very early period, the

higher phases of mesmeric phenomena appear to have been well understood.

The distinguished chemist and physicist, Baron Von Reichenback, of Vienna, in 1845, asserted that he had discovered a new force naming it the Od, Odylic, or Odic, or all-pervading force. By numerous experiments extending through some years, most carefully and scientifically performed, he established the existence of a remarkable influence or force, given out by magnets, causing a faintly luminous emanation from their poles; also by crystals, by the magnetism of the earth, by the sun's rays, by chemical action, by electricity, in short, to a certain extent, by all matter; also by animals, particularly by the human hand. Moreover, that this force and the so-called fluid of animal magnetism were identical. Thus was placed on a scientific basis the action of the hand in making passes over mesmerized subjects, an additional force by that means being imparted to their nervous system, closely connected with the vital force.

The assumption of a fluid or force as the cause of the mesmeric phenomena, had been, and still is by many, denied, who otherwise recognized and practiced the art; it had early been seen that individuals fell into the magnetic or somnambule state, without the aid of any one, and hence could not have received any new force; thus it was said that the whole was the result of the imagination. This assumption derived new weight when Dr. Braid, of London, published his process of Hypnotism, in which by a simple process of gazing at an object, the mesmeric or biological state was produced without any outside assistance. The larger number of physicians now accepted most of the facts of mesmerism, and among them was Dr. Carpenter, the distinguished physiologist.

Experiments carefully made by able physicians, however, had confirmed the existence of the Odic force, and the question arises how can all the facts be reconciled? It appears to me that this can reasonably be done. It is assumed that the Odylic force is contained in, and given out, by all persons, only varying in amount; and that this force is in intimate relationship with the nervous system, and hence closely associated with the emotional states of the mind, as well as with its unconscious action. This being premised, it follows that any disturbance in the natural distribution of the Odic force in the system, whether it be by a fresh accession from without, or by any action of the emotions or unconscious cerebration, produced by a suggestion, or dominant idea, might result in anaesthesia, or any other state of the mesmeric phenomena. It can thus be understood how it is that the power of the imagination, so-called, can cause such astounding effects. This force of the imagination in its therapeutic relations opens a wide, and most interesting field of exploration to the physician.

Dr. Tuke in his recent valuable publication has fully entered upon the subject, and discussed it in an able and scientific manner for the use of the medical profession. Of the power of the imagi-

nation over the human body there are numberless well attested cases; the effects are real and absolute, and not imaginary or fanciful, as some having confused ideas suppose.

The imagination in its medical sense is a complex mental power of great interest and importance. It is able to convert bread pills into emetics or cathartics of great potency; thus in an experiment by Dr. Durand in a hospital, one hundred patients were given inert draughts such as sugared water. In a short time after, he entered the wards, full of alarm, pretending that a mistake had been made, and that a powerful emetic instead of syrup of gum had been administered, and preparations were made accordingly. Of the one hundred patients, eighty were acted upon as if an emetic had really been given.

A case is given by Dr. Noble, in which a strong cathartic, composed of extract of colycinth and calomel, acted as an opiate, inducing a comfortable sleep in a patient, who supposed the medicine had been given for that purpose. A doctor left his prescription on the table for a lady, who suffered from pleurodynia, saying put this to your side. The patient literally did so, instead of obtaining the prescribed plaster, but in spite of the mistake, derived great benefit from the treatment.

Dr. John Brown, of Edinburgh, gave a laboring man a prescription for some medicine required in his case, saying take that, and in a fortnight you will be well. The man swallowed the prescription itself, misunderstanding the doctor, and in less than a fortnight he was entirely cured.

Sir Humphrey Davy, the great chemist, introduced a thermometer under the tongue of a patient afflicted with the palsy. The man at once exclaimed that the remedy—for such he regarded the thermometer—did him great good. Davy took the hint immediately, did not give the gas, but required him to return next day. He again inserted the same instrument in his mouth, the same result followed, and at the end of two weeks, the man was dismissed cured by a thermometer.

Warts are continually being cured by a variety of ways appealing to the imagination, such for example, as rubbing with a bit of meat and throwing it away. Dr. Carpenter says the charming of warts away are real facts, however they may be explained. An instance of automatic or unconscious action of the mind, is seen in the experiment of holding a coin or ring suspended by a hair, in a glass vessel, between the forefinger and thumb; the coin will in many cases strike the proper hour, without the conscious assistance of the operator.

The force of imagination has in many cases caused death itself, as in the case on record of a man sentenced to be bled to death. He was blindfolded, a sham operation performed, and tepid water allowed to run down his arm. At the close of the operation the man was dead.

The marvellous action of the mind over the circulation of the blood in the capillaries, is shown in the case of a lady, vouched for

by Dr. Tuke, who saw a child in whom she had a particular interest, coming out through an iron gateway. She saw the heavy gate swing to as in the act of closing, and it seemed to her inevitable that it would close on the ankle of the child and crush it. She found that she could not move to his assistance, from a sudden intense pain in her own ankle, which she had in no way strained or injured. With great difficulty she reached her home, and found on examination a red circle around the ankle, with a large red spot on the outer part, just at the place where the gate would have struck the limb of the child. Next morning the entire foot was inflamed, and she was confined to her bed for several days.

Dr. Tuke also cites a case by Planque, in which a healthy, robust man saw in a dream another man throw a stone violently against his breast. The vivid shock awoke him, when he found that there was on his chest a round mark having the appearance of a bruise. The next day there was so much swelling, that the surgeon had to scarify the part to prevent sloughing. Many cases of a like nature still more remarkable might be referred to.

Dr. Carpenter observes that certain states of the mind—produced by suggested or dominant ideas—have a remarkable influence on the organic functions, whilst the direct influence of the will is inoperative. If the imagination is possessed of such powers, it behooves the physician to call in its aid as a most valuable ally whenever practicable; it appears to be able to control the healing power of nature, and thus may be justly regarded as one of the most valuable of remedial agents.

Among the strange forces may be classed the vital or cell force of the physiologists. In the twilight of microscopic vision we perceive glimmering points only just emerging into indistinct perception from the surrounding transparent liquid; these grow, enlarge, become more distinctly visible, until at last, clearly perceived in their outlining forms. Did they exist before being rendered microscopically visible? Certainly, they existed before, because if a more powerful instrument had been employed, they would have been seen earlier. Again; flash a beam of electric light through transparent and colorless sulphurous acid gas—the beautiful experiment of Professor Tyndall—at first, the tube remains perfectly transparent, but after a time, the power of the vibratory motion of the intense beam of light makes itself known by shaking asunder the compound atoms of the gas. The atoms of oxygen and sulphur part company, the oxygen remains invisible as a transparent gas, but the atoms of sulphur, a solid, begin to gravitate toward each other, collecting into molecules; these becoming large enough to act on the finer rays of light, a faint blue sky color makes its appearance within the transparent tube. Presently the color deepens, as the process of agglomeration of the particles goes on, and becomes deeply blue; then, the process continuing, a whitish tint becomes mingled with the blue; it increases in depth of color, preponderates over the blue, which

ultimately settling on the sides of the glass, reveals to powerful microscopes twilight points of matter.

How excessively minute must have been the particles of the faint blue haze. Utterly beyond the vision singly of the best instrument, even after condensing into the deeply blue or even into the whitish vapor. Thus atoms, molecules, and organic cells, may exist in the transparent air, far beyond the vision of man, aided by all the powers of his transcendent art.

The beginning of the organic cell, which is the start of all vegetable and animal structures, is a totally invisible point of matter, or point of force I would prefer to call it, endowed with remarkable powers. It is not only able to draw asunder the compound atoms of the matter or pabulum with which it is surrounded, but it possesses the power of selecting out of these divided molecules, such atoms only as it requires both of in kind and quantity; uniting them together into new combinations, which thus form the little masses of matter which in the microscope, we recognize as the organic cell. The cell in its simplest existence is a mere gelatinous mass, composed of a certain and large number of atoms of oxygen, hydrogen, carbon and nitrogen, with a very few atoms of sulphur and phosphorous; it has no particular form, but if left entirely free would generally assume the spheroidal; it has no envelope, but is endowed with a capability of contraction, and has been called sarcode or protoplasm. The atoms are held together by unstable chemical affinities, and thus are, like a tall tower on a very narrow base, liable at all times to fall into smaller masses of component materials, but the power that selected and lifted the atoms into their places, preserves the integrity of the structure, and is called vitality or cell force.

Cells can be thoroughly dried and so remain for an indefinite time, in some cases, without losing their vitality, as in the grains of mummy wheat and peas, and certain infusoria. Also certain germs of cells may be exposed to a degree of heat above boiling water and still survive, or in numerous cases may be frozen with impunity. If a cell be exposed to the action of carbohic acid or heat, the albuminous portion of its structure is coagulated, and thus the relations of attraction between the cell force and cell contents are destroyed; the cell in such case is said to be killed. Will it be proper to assume that the cell force has been transformed into light, heat, electricity, or some other force, when no proof has ever been given of such being the case? Has it been destroyed? No force is ever destroyed, as is now well known.

If then the cell force is not destroyed, nor changed into the physical or chemical forces, it must still remain as a cell force; hence I suppose that when the cells of the food are passed into the stomach, and dissolved by the pepsin and gastric juice, the cell forces survive, and in a subdivided state, reappear in the chyle corpuscles of the central lacteals.

Also when animal matter putrifies, the cell forces reappear

perhaps as vibrios and bacteria; and when vegetable matter decays in the soil, the cell forces may remain with the humus, and constitute an important element of its nutritive value.

Neither chemistry or physics detects any difference between a living and a dead cell, nevertheless the cell has lost that essential element, which gave it its distinguishing characteristics. Cell force cannot be the simple resultant of the molecular forces of the constituent atoms of the cell, like the crystalline force in the crystal, because if it were, then it would remain with its components, and would be present necessarily, as long as its molecules constituted the cell structure—in other words could not be *killed*.

Cell force increases or grows by the conjoined action of the sun's rays, carbonic acid, ammonia and water, hence it must have a close relation with the solar and chemical forces. Once formed however, it appears to have become individualized, and perhaps independent as regards its existence, to a great degree, if not entirely, of the molecules constituting the material structure of its cell.

It has been, and still is, a question of great interest with scientists, whether the cell force can be generated spontaneously by the above forces, or whether a previously existing cell force or germ of a cell, is not in every instance required. It is agreed on by all, that if there be spontaneous action, it can only result in rudimentary cells, or cells of the lowest order of existence.

In certain cases two living cell forces coalesce, forming a single cell of greater power, or possessing capabilities which do not exist in either of the original cells; conversely, an individual cell force is capable of sub-division, perhaps indefinitely. An interesting instance of sub-division is to be found in the moner. *Ich* lives at the bottom of seas; in its fullest development a mere globular mass of sarcode or protoplasm, or cell of the lowest order. It continues to grow in size up to a certain point, and then simultaneously divides its entire substance, except a thin outer membrane, into from thirty to fifty cells, these burst open the envelope and separate from each other becoming individualities, each one precisely alike the original cell, and goes through the same history. This organism, it might be said, never dies.

If cell forces once formed, have an indefinite existence until absorbed or assimilated by the living cells of vegetables or animals, the atmosphere must be largely permeated by these germs or invisible cells; we draw in large numbers in the act of breathing, which may greatly assist oxygen in giving strength and life-sustaining power. It would follow, also, that infected us and contagious diseases would be breathed as invisible cell germs, which might develop in the blood, until arriving at microscopic vision, as has been asserted by Dr. Salisbury and others.

There exists a peculiar force called by physiologists the formative force, or force of form, which gives the form to all organic structures. It is certainly a remarkable force, for from living

germs precisely alike to all appearances, there ultimately grow up or develop all vegetable and animal forms.

Philosophically, we would have to regard all forms of the mineral, vegetable and animal kingdoms, as being the complex resultants of the various component forces of the structures. But resultants cannot precede components, hence, it would follow that the original germ contained all the components of the ultimate form: that is, that every cell force of the completed structure had its representation in the germ from which all were derived, as believed by some phy-siologists. It is impossible to associate forces of the same nature without producing resultants: each representative of a cell in the germ must be a force, then the association of all the cell representative forces must have an ultimate resultant which must have the embryo form of the completed structure.

In the mineral kingdom, the simplest form is the symmetrical crystal, a resultant of the molecular forces of the constituent molecules; compound forms resulting from compound resultants are seen in the arborescent shapes assumed by the individual crystals of ice on the windows in frosty weather, and the beautiful and still more complex geometrical forms of snow-flakes. Also in the stony accretions resembling flowers, bunches of grapes, snow balls, and other shapes on the walls of caves.

The organic world has forms belonging to a higher geometry, as has been said, than that of the mineral kingdom. Passing from the simple spheroidal cell, to the higher and far more complex forms of vegetable and animal life until the human form is reached, which is the perfection of form.

In all nature, animate and inanimate, there is a general tendency to assume shapes or symmetrical forms: forms may exist wherever there is matter; even the attenuated vapors of Tyndall's experiments are said at times to assume beautiful forms of exquisite shapes and symmetry. Above the poles of magnets, lines of force constituting beautiful forms of curves, become visible to the eye when attractive matter, such as fine particles of iron nickel, are sifted over them; forms of matter invisible to the eye may then exist of which our vision can take no cognizance.

Every transparent block of ice is filled with forms of icy flowers, existing invisible to the eye, until the powerful beam of electric light, assisted by optical contrivances, bring them into view. Nature revels in forms and colors: with unsparing hand she scatters them in the earth, in the waters and in the fathomless air; the solid earth is a mass of infinitely varied crystalline forms, and its surface is enameled with gorgeously colored flowers.

The influence of color should not be overlooked by the physician; nature has not neglected this hygienic and psychological power, but has spread the softest green carpet for him to walk over, and painted it with the most beautifully tinted flowers, to cheer up his mind and soothe his vision. Above him an azure mantle spreads itself over the expanse of the heavens, lighted up

by the golden orb of day, whilst a robe of darker blue, spangled over with twinkling stars, makes night beautiful; thus, to quiet his earthly passions, and to harmonize his feelings with the pure and sublime influences above and around him, the fevered patient should be soothed with the neutral tints of his chamber, and the desponding enlivened by bright and varied colors; inflammatory diseases and excited nerves by the softest tints of blue and green, whilst deficiencies of animal heat and lethargic conditions of the system, would be warmed and excited to better action by the bright tints of red.

A remarkably strange force which has recently received the name of *Psychic Force* is now exciting great attention and discussion. It derives its name from its intimate connection with the mind or intelligence, and is now being investigated by some of the ablest scientists of Europe.

Of all the forces which act on matter, this is the most wonderful. Indeed, so strange is its action, that only those who have actually observed its effects, and have had opportunities of critically examining the subject, can bring themselves to fully believe in its existence. The operations of this extraordinary force has been so mingled up with spiritual matters, that they have been confounded, and hence the very name may excite opposition in some minds. I presume that it will not be questioned, that all the the forces of nature acting on matter are included in the domain of science, and that it necessarily is expected of scientific men to investigate their nature, and, as far as practicable, determine their laws. The only question then is, as to the existence of this asserted strange force. It will be interesting to give the names of some of the eminent persons—all well-known in the scientific and literary world—who directly or inferentially assert its existence; certainly, the list is sufficiently respectable to warrant some belief in its actuality. Dr. Crookes, the leading chemist of England, who is now devoting himself to its investigation; Professor Wallace, the eminent naturalist and late President of the Ethnological Society; Professor Varley, the celebrated electrician; the late Professor DeMorgan, the distinguished mathematician; Mr. Harrison, F. R. S., now President of the Ethnological Society of England; Dr. George Sexton, a prominent physician of London; Professor Gunning, William Howitt, Robert Dale Owen, the well known authors; Hiram Powers, the sculptor; the Rev. John Pierpont; Harriet Martineau, the distinguished authoress and philosophical writer; T. A. Trollope, the novelist; Dr. Ashburner, the prominent surgeon; the late Brougham; Camille Flammarion, and Herman Goldsmidt, the French and German astronomers; Professor Strieff, of the College of Chartres; Dr. Höffle, the author of the *History of Chemistry*; M. Bounemire, the historian; the late Emperor of the French; Archbishop Whateley; the poets Tennyson and Longfellow; Thackeray, Ruskin, Robert Chambers, Dr. Gath Wilkinson, Kossuth. Garibaldi, Mazzini, Victor Hugo, Jules Favre; the late Lord Lyndhurst; the late Sir Roderick Murchison, the

eminent geologist; Guizot, the historian; the late Sir Charles Napier; ex-Senator Wade; Judge Edmonds; Professor Mapes, the agricultural chemist; Dr. Robt. Hare, the greatest chemist America has produced; ex-Governor Tallmadge; H. K. Brown, the well known sculptor; Professor Gregory, of Edinburgh University; Sergeant Cox, the distinguished barrister of London; and numerous other gentlemen occupying prominent positions might be enumerated.

This singular force appears to have a more intimate relationship with the mind and will, than the nervous force; the latter emanating from the grey matter of the nervous structure, controls the cell forces, as well as the physical forces of the system, counteracting gravitation by the muscular fibres, causing chemical transformations and reactions by the aid of the cell forces of the tissues; as also by direct correlation probably with the physical forces, producing light, heat, and electricity. Thus nerve force acts on matter and its forces, but only when in immediate contact with the physical system, whereas the psychic force acts on matter and controls gravitation and cohesion, light, heat, and electricity, or the molecular forces generally, at a distance. The nervous force frequently acts without any connection with intelligence, but the psychic force is always directly controlled by intelligence.

To the physician especially, this force so intimately connected with intelligence, must be a subject of deep interest, it having been seen what powerful influence the mind has over the *vis medicatrix naturee*. No attempt has as yet been made to apply it to the healing art, simply because its laws are not as yet understood—they have not been determined; nevertheless sooner or later it cannot fail to prove highly valuable—perhaps the most important of all remedial agents.

There is a strange power in nature, which however I should not have touched upon in this address, as it more properly belongs to another and higher domain than that of science; but an eminent physicist—one of the leading men of science—has boldly thrown the gauntlet down, and positively denies its existence. It is natural for those entering the walks of science, to look up to its leaders as authority on all subjects of which they express decided opinions; thus assertions made by them expressly to effect the scientific mind, are calculated to have great weight, although the subject may be in fact, out of their legitimate sphere. Thus it becomes the duty of men devoted to science to examine into such expressed opinions, and to state their views likewise on the matter in question, if it be one calculated to do harm by leading younger minds into error.

The power alluded to, is "the influence of prayer in healing the sick," or rather its influence generally in the affairs of mankind.

This eminent physicist believes in the theory of evolution; let it be supposed that we accept this theory in its fullest extent. Then starting at the twilight germ cell spontaneously brought

forth by favorable conditions in the earth's earliest history, by a long and continued series of developements, rising step by step through the vast periods of geologic time, to higher and higher organizations—leaving in the great charnel house of the rocky strata of the globe, the vestiges of creation scattered as fossil remains, in countless numbers; telling of life and death through all the countless ages of the past. Finally, from this almost interminable chain of ascending forms and forces, we arrive at the human form with its wonderful intellectual powers.

At once this intelligence, although but a feeble germ, like a ray from the spiritual world, begins to act upon and control the forces of nature. Fires are kindled, ferocious animals destroyed by the bow and arrow, wild weeds exterminated, and made to give place to useful grains; the force of the air is employed to turn the grinding mills, and to fill the sail; the power of water is used to turn machines and irrigate the soil. In succeeding ages, this intellectual power, increasing in strength, compels the force of heat to move its engines; creates light to overcome the darkness of night, controls chemical action, and ever makes the all-pervading electricity act as its ready servant. Everywhere this evolved force of intelligence, takes its place in the complex machinery of the earth as a prime mover, and most important integral portion; evidently arranged as an essential part of the mechanism, in its original projection.

The intelligence of man continually controls and guides the forces of nature, causing results that would not have been produced, had nature been left to the action simply of what are called her blind laws. Then in the grand progression, intelligence has been evolved, not as a mere flower without seed or fruit, to give beauty to the landscape, or as an ornament simply in creation, but as a potent power, placed on the earth to guide the subordinate forces to economic results and useful ends—to make two blades of grass grow where but one grew before; and, if a force once created is never destroyed, to pour into a higher sphere of action, continued accession of intellectual working forces.

If man controls the forces of nature, why should it appear incredible that a higher intelligence should control and guide the machinery of the universe? Is it an answer to say that the mechanism is so perfect that it requires no supervision, no guiding hand of intelligence? If so, how is it that human intelligence is required to perfect the machinery of this world and guide its forces? If the Supreme Intelligence does not in any case directly control the forces of nature, certain it is that inferior intelligencies are continually doing so, not on this earth only, but doubtless on all the habitable planets of the universe.

Gibbon, the great historian, said that no one would be apt to accuse him of superstition, nevertheless that he was compelled to acknowledge that there was a strong appearance of retribution in the history of nations.

The earth is a microcosm, but in the infinitely small we catch

a glimpse of the workings of the infinitely great. The universe is a mechanism of astounding proportions, acted upon by inconceivable forces, and controlled by supernal intelligence. Throughout its boundless extent, the power of intelligence must enter as an active factor, controlling and guiding the forces, but not annulling or destroying the laws of nature.

The forces of intelligence have a like nature whatever may be their gradation of power, and hence must mingle and vibrate together. The intellectual force of man urged to an active state by the emotions, sends forth a vibration of intensity that finds a responsive chord leading up to the great centre of intellectual power: a thrill of sympathy returns along a ray of motion, and the physical forces obey its mandates; the man has earnestly with his whole power appealed for aid, and presently the angel of health appears, bringing healing in its wings.

The testimony of a cloud of witnesses affirmatively asserts that prayers have been answered. The records left by good men of all nations corroborate the assertion, and if human testimony avails in any case, the great scientist must be convicted of error, in denying that of which he is ignorant. Deeply earnest appeals are forces expended which cannot be lost, but in some way must bring an equivalent, nor perchance in having the request accorded, for who is sufficiently wise to know that it might not result in harm, but in unforeseen ways producing good results, and not unfrequently the request itself is granted.

Thus, let me as a watchman on the tower, assure you that science in its fullest development, is no enemy to the nobler instincts and higher aspirations of the human soul; but that she stands ready with her torch, to light you on when you shall have finished your earthly career, to fairer climes and heavenly scenes.